Uroxys Rodriguezi, de Borre.

This species is described by M. Preudhomme de Borre in the Ann. d. l. Soc. ent. de Belgique, 1886, p. 107, and he mentions that it is the "*Uroxys dilaticollis*, Deyrolle," a manuscript name. In the British Museum collection there is a specimen bearing this manuscript name, and it agrees well with the description of *U. Rodriguezi*. It appears to me, however, that it is a *Chæridium* having a short, punctured mesosternum and short anterior coxæ.

XLV.—*Notes on Slugs, chiefly in the Collection at the British Museum.* By T. D. A. Cockerell.

[Continued from p. 288.]

III. The Genus *Limacella*, Blainville.

While working on the slugs at the British Museum I came across the type specimens of *Limacella lactiformis*, Blainville. The two examples are in a bottle with the label "*Limacella lactescens*," and another label, apparently written by Dr. Heynemann, "Original zu Fig. 1. Taf. 7. Fér. Hist. Nat." They are true *Philomycus*, presenting no generic difference from the well-known species of that genus. Heynemann (1884) has referred them to *Arion*, but he could not have examined them sufficiently, and was no doubt misled by the figure in Man. de Mal. (1827), pl. xli. That they are really Blainville's types need not be doubted, as they agree with his figures in outline, and his original description, notwithstanding that he misunderstood the characters of the slug, is sufficient to show that he had not an *Arion* before him. He refers to the absence of a shell and the genital orifice at the base of the right tentacle. The outline of the figure, and especially the anterior portion of the mantle, suggests at once a *Philomycus*. The supposed *Arion*-like mantle indicated in the figures is really due to an outline of some of the internal organs, visible on account of the transparency of the slug. The figures in Journ. de Phys., November 1817, show how the mistake began, fig. 4 having even a sort of spiral coil in the middle of the anterior part of the mantle. The figure of *L. elfortiana* in Man. Mal. is the same outline, but apparently patched up from an *Arion ater*,

with altogether fictitious rugæ on the back. Férussac's figure is after one of those in Journ. de Phys., and is fairly recognizable.

Altogether I think it must be held that Blainville described and figured his genus *Limacella* sufficiently for recognition, and as it antedates *Philomycus* by three years, the name must be used. *Limacella*, Brard, 1815, need not be considered, as it is identical with *Limax*, Linné, 1767. The synonymy of *Limacella*, Bl., will accordingly stand:—

Limacella, Blainville.

1817. *Limacella*, Blainville, "Mém. sur quelq. Moll. Palm." Journ. de Phys. Dec. 1817, p. 443 (text), and Nov. 1817, figs. 4, 5.
1820. *Philomycus*, Rafinesque, Ann. of Nat. p. 10.
1820. *Eumelus*, Rafinesque, Ann. of Nat. p. 10.
1824. *Meghimatium*, v. Hass. Bull. Univ. Sci. iii. p. 82.
1842. *Incilaria*, Bens. Ann. & Mag. Nat. Hist. ix. p. 486.
1842. *Tebennophorus*, Binney, Bost. Journ. Nat. Hist. iv. p. 171.
1864. *Pallifera*, Morse, Journ. Portl. Soc. i. 8, fig. 5, pl. iii. fig. 6.

It does not seem necessary to recognize more than one genus here, though v. Ihering (Nachr. d. m. Ges. 1889) recognizes three—*Philomycus*, *Pallifera*, and *Meghimatium*. *Pallifera* may be conveniently retained as a subgenus.

The species of *Limacella* are as follows:—

Limacella lactiformis, Blainv.

1817. *Limacella lactiformis*, Blainv. Journ. de Phys. Dec. p. 444.
1821. *Limacellus lactescens*, Férussac, Hist. Nat. Moll. pl. vii. fig. 1.
1825. *Limacella elfortiana*, Blainv. Man. de Mal. et de Conch. p. 464.

This appears to be distinct from any species since recognized. The British Museum types may be briefly described as follows:—42 millim. long; respiratory orifice 7 millim. from anterior border of mantle. Sole, lat. 7 millim. Entirely greyish white; mantle pellucid, semitransparent, finely granulose. Sole slightly ochreous, unicolorous. A distinct groove round the edge of the foot. Liver pale chocolate.

Gray in 1855 (Cat. Pulm. p. 158) has referred this species to *Philomycus*.

Limacella carolinensis (Bosc).

Limax carolinensis, Fér. Hist. 77, pl. vi. fig. 3.

There are two specimens of this species in the British Museum from Virginia (*Dr. J. Wyman*), agreeing excellently

with Férussac's figure. This slug is cylindrical, curved, and *narrow* (in alcohol); *sole narrow*; ground-colour and colour of sole pale yellow, back thickly marbled with brown-grey, and with *two longitudinal series* of dark egg-shaped spots. Jaw bright-coloured, not ribbed. (Description from Brit. Mus. specimens.)

Dr. Gray (Brit. Mus. Cat.) also describes *L. carolinensis*.

Limacella nebulosa.

? *Eumelus nebulosus*, Raf. Ann. of Nat. 1820.
Tebennophorus carolinensis, Binney, Terr. Moll. U. S. vol. ii. p. 20.

This and the last have hitherto been included together under the one name *carolinensis*, and it is not without misgivings that I venture to separate them here *. Yet, from the specimens which I have examined, there would certainly seem to be a specific distinction between the northern and southern forms referred to *carolinensis* in the Eastern United States and Canada. The British Museum contains specimens of *nebulosa* as follows:—

(1) From Mr. W. G. Binney, labelled *T. carolinensis*.—Ochreous, marbled with black above, the marblings rather inclined to be in three longitudinal series. Sole unicolorous.

(2) W. Canada (*Dr. Maclagan*).—Pale yellow, marbled above with brownish grey, the markings being a broadish dorsal and narrower lateral brownish-grey bands, with irregular spots over the rest, except sides near foot. Sole unicolorous.

(3) Amhurstburgh, Canada West (*Dr. O. W. Maclagan*).—Like the last, but mottling grey and more diffuse; two narrow dorsal and narrowish lateral bands, rather obscurely indicated in grey. Grey mottling thicker. Ground-colour pale yellowish.

Comparing *carolinensis* with *nebulosa*, we note:—

(*a*) The Virginia *carolinensis*.—Sole narrow, yellowish, pale, without transverse striæ; body smoothish.

(*b*) *nebulosa*, no. 1 above.—Sole broad, brown, with strong transverse striæ; body rugose.

* Mr. W. G. Binney writes (*in litt.* Sept. 9, 1890):—"I am rather sceptical about there being two species . . . . as you say . . . .—there *is* a big species of *Tebennophorus* confounded with *carolinensis*, but having a ribbed jaw."

Or, taking measurements :—

(*a*) The Virginia *carolinensis*.—Long. 35 millim., sole, lat. 3 millim.

(*b*) *nebulosa*, no. 1 above.—Long. 35 millim., sole, lat. $7\frac{1}{3}$ millim.

(*c*) *nebulosa*, no. 2 above.—Long. 36 millim., sole, lat. 8 millim.

Rafinesque described five supposed species belonging to *Philomycus* and *Eumelus* in 1820 as *quadrilus*, *oxurus*, *flexuolaris*, *fuscus*, and *lividus*. They will probably prove to be varieties of *nebulosa* or *carolinensis*, but they have not yet been identified.

Limacella aurata (Tate).

A little-known species from Nicaragua.

Limacella crosseana (Strebel).

Mexico. Seems near to *L. carolinensis*.

Limacella costaricensis (Mörch).

Costa Rica.

Limacella Sallei (Cr. & Fisch.).

Mexico, State of Vera Cruz.

Limacella dorsalis (Binney).

Philomycus dorsalis, Binney, Bost. Journ. Nat. Hist. 1842, iv. 174.
Pallifera dorsalis, Morse, Journ. Portl. Soc. 1864.

N.E. United States. Jaw ribbed.

Limacella Wetherbyi (W. G. Binney).

Pallifera Wetherbyi, W. G. Binney, Ann. Lyc. of Nat. Hist. of New York, 1874, xi. 31, pl. ii. figs. 1, 2.

Kentucky. Jaw ribbed.

Limacella Hemphilli (W. G. Binney).

Tebennophorus Hemphilli, W. G. Binney, Man. Amer. Land-Shells, 1885. p. 247; Third Suppl. Terr. Moll. U. S. 1890, pl. vi. fig. n.

Georgia and North Carolina. Jaw ribbed.

Limacella australis (Bergh).

Oahu, Sandwich Islands. Jaw ribbed.

Limacella confusa, sp. nov.

Limacella bilineata (Kef. et auctt. plur. (non Bens.) sp., as *Philomycus*, &c.).

Very close to *L. nebulosa*, at least externally. Long. 34 millim., sole, lat. 6 millim., respiratory orifice 6 millim. from anterior border. Head and sole pale yellow, unicolorous; sole finely transversely wrinkled all over. Mantle rather rugose, ground-colour pale yellowish, clouded with brown-grey dorsally, with also numerous dorsal dark spots, tending to form oblique lines running centrally backwards. Sides with broad black bands and dark marbling below them. Jaw not ribbed.

The above description is from a specimen in the British Museum labelled "Challenger coll., May 1875, Yokohama, Japan." It is the so-called *bilineatus*; it is like v. Martens's figure of that species copied by Tryon. W. Keferstein (Mal. Blätt. 1866) figures *L. striata* and *L. confusa* (as *P. bilineatus*), the latter from Yokohama, with the anatomy. The anatomical characters of *confusa* offer differences from those of the American *nebulosa*, so that, apart from their geographical ranges being distinct, they need not be confused.

Limacella formosensis, subsp. nov.

Length 33 millim., sole 4 millim. broad; respiratory orifice 5 millim. from anterior border of mantle. Elongate-cylindrical, slightly tapering, dark coffee-colour; sole unicolorous, transversely thickly but finely granulose-wrinkled; back with an ill-developed, median, narrow black band, and better-developed, narrow, black lateral bands in the situation of the upper edge of the bands of *L. confusa*; area between the bands (subdorsal) slightly dark-marbled. Sides below lateral bands dark-marbled, with a slight tendency towards the formation of a lower second lateral band. Face with two longitudinal grooves. Back granulose.

Described from two alcoholic specimens in the British Museum, collected in Formosa and presented by Matthew Dickson.

I was at first inclined to regard this as a geographical race of *confusa* (=*bilineata*, auctt., non Bens.) (which has been recorded from Formosa*), and as I have not examined the jaw, I cannot yet be certain whether it belongs with that species or true *bilineata*. However, *bilineata* is found in the Chusan Islands; so it becomes highly probable that the Formosa form has a ribbed jaw and is allied thereto.

L. formosensis differs externally from *confusa* in its colour and markings, but resembles it in its tuberculose sole. *L. formosensis* compared with the Chusan *bilineata* does not seem specifically different so far as external characters go.

Limacella campestris (Godw.-Aust.).

Limacella bilineata, subsp.
Philomycus (*Incillaria*) *campestris*, Godw.-Aust. Journ. As. Soc. Beng. xlv. pt. 2, p. 315, pl. viii. fig. 3 (1876).

Ochraceous yellow, with an obscure dorsal and lateral pale brown bands, narrow and more or less interrupted. Sole finely laterally transversely wrinkled. Length 23 millim., respiratory orifice 4 millim. from anterior border of mantle; sole 4 millim. broad.

Shape of slug cylindrical, tapering posteriorly. Jaw pale, ribbed.

Differs from *confusa* in its non-tuberculose sole and different markings and its ribbed jaw.

Described from five specimens in the British Museum from Dukhun (*Col. Sykes*).

Although Godwin-Austen gives but a short description and rather indifferent figure of his type of *campestris* from Kholabari, and says nothing about the jaw, I think there can be no reason for considering our Dukhun form distinct from *campestris*, since, so far as we know, there is not any important difference between them. Should the type of *campestris* be found later on not to have a ribbed jaw, it will be time to propose a new subspecific name for the slugs described above. The discovery of a group of *Limacella* with ribbed jaw in Asia is very interesting and tends to endorse the opinion that this is not a generic character.

* See Heynemann, 'Die nackten Landpulmonaten des Erdbodens,' 1885, p. 66.

Limacella bilineata (Bens.).

Incilaria bilineata, W. H. Benson, Ann. & Mag. Nat. Hist. 1842, ix. p. 486.

Length 26 millim., sole 4 millim. broad. Respiratory orifice 4 millim. from anterior border of mantle. Colour reddish brown. Back with obscure grey marbling, sides with a broadish black band. Sole finely transversely striate-grooved. Mantle rugose. Jaw dark, strongly curved, with about sixteen ribs.

L. bilineata differs from *L. confusa* in its non-tuberculose sole, the lines on the top of the neck diverging between the eye-peduncles, the ground-colour, partly in the markings, and in the jaw.

But for its ribbed jaw it might be thought specifically identical with *confusa*.

Described from a specimen in the British Museum marked "Chusun [apparently so written, but presumably meant for Chusan], on garden-fences; ash, with dark lines lengthwise."

Benson's type was a similar specimen from Chusan.

Limacella monticola (Godw.-Aust.).

Philomycus monticolus, Godw.-Aust. Journ. As. Soc. Beng. xlv. p. 315 (1876).

From Godwin-Austen's short description this would appear to be a quite distinct species.

Limacella chinensis, sp. nov.

Length 17 millim., respiratory orifice $2\frac{1}{2}$ millim. from anterior border of mantle; sole 2 millim. broad. Colour pale grey, sole ochreous anteriorly. Three pale brown bands on mantle—one dorsal, faint; lateral ones rather stronger; all narrow. Some slight marbling round respiratory orifice. Sole with lateral, transverse, grooved striæ.

A small cylindrical species, tapering posteriorly. Smoother and more delicate than *L. confusa*.

Described from a specimen in the British Museum, collected 1300 miles up the Yang-tse River, China (Consul Swinhoe's collection).

Apparently a distinct little species, but more material is very desirable. Judging from the published account of *picta*, it resembles that species.

Limacella striata (Hass. 1824).

Hab. Java.

See Bull. Soc. Nat. iii. p. 82, 1824, and also Férussac, Hist. Moll. ii. p. 96*, pl. 8 E. fig. 1 (as *strigatum*), and W. Keferstein, Mal. Blätt. xiii. p. 64, pl. 1. figs. 1–4 (1866).

Limacella picta (Stol.).

Meghimatium pictum, Stol. Journ. As. Soc. Beng. xlii. pt. 2, p. 30.

Hab. Island of Penang.

Limacella reticulata (Hass., Fér.).

A doubtful species.

Limacella cylindracea (Fér.).

Meghimatium cylindraceum, Fér. Hist. Moll. pl. 8 F. figs. 8, 9.

A very doubtful species. In the figure the mark where the respiratory orifice should be looks more like an injury.

IV. Descriptive Notes on Various Species.

Under this head I will note a few species belonging to genera which will not be specially reviewed in the present series of papers.

"Arion" aterrimus, Gray.

Arion aterrimus, Gray, Cat. Pulm. 1885, p. 55.

Length 36 millim.; mantle, length 22 milllim.; respiratory orifice 8 millim. from anterior border of mantle; sole 11 millim. broad. Entirely black, mantle granulose, tuberculate anteriorly, oval, produced and bluntly angled behind; body smoothish, with linear grooves from mantle to foot, about 2 millim., more or less, apart. Body not keeled. Tail flattened, mucus-pore inconspicuous or none. Sole apparently undifferentiated into parts. Edge of foot sulcate.

This description is from an alcoholic example in the British Museum marked "*Limax* (*Arion*) *allerian* [sic], S. Africa." There can hardly be a doubt that it is Gray's *A. aterrimus*, although the description in Cat. Pulm. is so very short.

It is interesting to be able to redescribe this slug, as it has been a lost species, not recognized by subsequent authors. It is surely not an *Arion*, and it may represent a new genus, unless it belongs to Mörch's *Oöpelta*, with which it seems to agree externally so far as generic characters go. But until the jaw and lingual dentition of *A. aterrimus* are known it will be impossible to be certain of its proper position.

Ariunculus Moreleti (Hesse).

Length 13 millim., breadth 2½ millim. Head dark brown. Mantle dark brown, faintly mottled with black lateral bands, bordered above by pale bands, and continuous with those on body; respiratory orifice a little anterior to middle. Body pale grey at sides, with dark lateral bands and dark subdorsal bands, four in all, leaving pale dorsal and subdorsal narrow bands between them. Sole broad and grey.

Described from a specimen kindly sent to me by Mr. J. H. Ponsonby, collected at Tangier some years ago. It differs a little from the original description, but is evidently the same species.

Pollonera has recently placed this species in *Geomalacus*, subg. *Letourneuxia*.

Testacella albida.

1885. *Testacella haliotidea*, v. *scutulum* (pars), Taylor and Roebuck, Journ. of Conch. iv. April, p. 320. (*Hab.* Gibraltar.)
1885. *Testacella haliotidea*, v. *scutulum*, subv. *albida*, Cockerell, Sci. Goss. October, p. 225. (*Hab.* Gibraltar.)
1887. *Testacella*, sp., Ponsonby, Journ. of Conch. v. July, p. 195. (*Hab.* Gibraltar.)
1888. *Testacella*, probably *haliotidea*, Taylor, Journ. of Conch. v. July, p. 346. (*Hab.* Gibraltar.)
1888. *Testacella*, sp., Pollonera, Boll. Mus. Zool. An. Comp. Torino, p. 6, figs. 10, 11. (*Hab.* Olot, Spain.)

The dried type of *T. albida*, collected by the Rev. J. W. Horsley at Gibraltar, is as follows:—

Length 15½ millim.; sole 3 millim. broad; dorsal longitudinal grooves about 2⅔ millim. apart, oblique grooves well marked. Sole separated from body by a groove and with transverse grooves at intervals, well marked at sides. Nucleus of the shell gone (broken or eroded). Shell pale horn, growth-ridges strong. Length of shell 4 millim.

The other white *Testacella* recorded from Spain (by Pollonera) is placed here, although the Gibraltar shell is narrower anteriorly than Pollonera's figure. It is not very likely that

these white specimens are more than a varietal form of *haliotidea* or some allied species; but as they do not agree exactly with anything known to me I place them provisionally as a species, *T. albida*. Moquin-Tandon's *T. haliotidea*, var. *albinos*, does not appear to be identical with the Spanish *albida*.

The type specimen of *albida* is now in the British Museum.

Vaginula olivacea (Stearns).

Veronicella olivacea, Stearns, Proc. Bost. Soc. Nat. Hist. 1871.

Length 45 millim., breadth 18 millim., sole 5½ millim. broad.

Finely granulate above, blunt-squarish behind. Above dull ochrey, indistinctly and minutely marbled with grey; a pale dorsal line is slightly indicated on posterior half. Superior tentacles (eye-peduncles) bluish grey; inferior tentacles pale ochrey, concolorous with head and underside of body. Jaw brown; I counted about eighteen ribs without removing it from the animal.

Described from a specimen sent to me by Mr. W. G. Binney, collected in Nicaragua. The Californian locality quoted for this species is surely rather doubtful; probably the specimen found was accidentally introduced. Is it not possible that *olivacea* and *occidentalis* (Guild.) are different forms of the same species?

Hyalimax (*Jarava*) *andamanicus*, Godw.-Aust.

A specimen in the British Museum, which appears to be typical, is labelled "Andaman Is., Dr. J. Anderson." It has the mantle strongly convex; the colour is yellowish white, without markings; foot slightly orange-tinged.

Hyalimax andamanicus, var. *punctulatus*, var. nov.

Yellowish white; foot slightly orange-tinged. Minute grey specks on mantle and grey streaks on hind part of body.

Hab. Andaman Islands (*Dr. J. Anderson*; Brit. Mus., in bottle with type).

The mantle of this specimen is flattish, so that the outline of the slug is greatly depressed compared with the typical one. The jaw does not seem quite like that figured by Godwin-Austen for the type; but I was not able to sufficiently examine it. It seemed to me that it had some sort of central

projection. It is possible that *punctulatus* may be a distinct species; but there is not yet sufficient evidence for classing it as such.

Chlamydephorus Gibbonsi, W. G. Binn.

Length 47 millim., orifice 7½ millim. from posterior extremity. Sole not differentiated into parts, smoothish, 5 millim. broad. Tentacles (eye-peduncles) pale bluish grey. Colour pale yellowish, becoming dark grey on back, with more or less of a pale dorsal line of ground-colour. Reticulations polygonal, with the interstices minutely subdivided. Sole slightly transversely grooved. Mantle none.

Described from a specimen in the British Museum from Cape Colony (*F. P. M. Weale*).

Apera, the name proposed by Heynemann for this genus, will probably have to be used. *Chlamydophorus* (Harl.) was proposed for a genus of Mammalia as early as 1825.

[To be continued.]

3 Fairfax Road, Bedford Park, Chiswick, W.,
September 16, 1890.

XLVI.—*A List of the Species of* Achatina *from South Africa, with the Description of a new Species.* By Edgar A. Smith.

In the endeavour to identify the new form hereafter described it was necessary to find out what species were already known from the region where it was discovered. In doing this it appeared that it would be useful to get together a list of all the forms known to occur in the southern portion of the African continent. This I have done, arbitrarily limiting the area on the north at the 20th parallel.

Already as many as eighteen species have been described, and doubtless this number eventually will be increased considerably when this region, and especially the mountainous parts, has been more completely explored.

A number of the *Achatinæ* from various parts of Africa seem to differ only very slightly from allied forms, and it may fairly be anticipated that the separation of species will become more and more difficult through the discovery of intermediate forms in parts hitherto unexplored.